

# The Planters' Chronicle.

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## THE U. P. A. S. I.

(INCORPORATED)

### Contents.

*The Editor has only been able to find room for one page of Mr. Baxendale's interesting paper on Rubber in continuation of the last publication, but hopes to conclude the paper in next week's issue.*

The Scientific Department issues a valuable paper on various topics of interest to the planting community. The method of burning lime should attract the attention of those who are within reasonable distance of deposits, and the importance of manganese as a plant food is noticed.

The reports of the Wynad Planters' Association and the Central Travancore Planters' Association are published. Particular notice should be taken of the fact that the Mysore Government do not recognise the contracts with maistries attested before village patels.

Our correspondence columns are full of interesting letters, asking for information, and receiving replies from the highest authority. Lately there has been an awakening of interest shown by many planters, seeking for light, and the Editor sincerely hopes that his columns will now onwards be more freely used, and that the interest roused will not be allowed to lapse. In reply to a previous correspondent we publish a clear and lucid letter on Estate Accounts, which should lead to others.

Mr. Anstead, Planting Expert, replies to Mr. Gerrard on Brushing and Spraying, and both he and Dr. Coleman reply to Mr. Danvers on the Fertilisation of Coffee.

To Mr. Graham "A Curer" replies and expresses willingness to set the former's doubts at rest as regards rebates on Freights.

We consider Messrs. Stanes & Co's offer to guarantee their manure bags free from infection both timely and wise, merits the approbation of the planting community. Mr. King-Church who first mooted the question, is to be congratulated on the rapid response to his suggestion.

Secretaries of District Associations are reminded, that the thirty days' notice required to place original motions on the Agenda Paper has elapsed.

### THE SCIENTIFIC DEPARTMENT, U.P.A.S.I.

*Method of burning Lime.* The problem of good lime for agricultural purposes is a very important one. Most planters are agreed that an occasional dressing of lime is necessary on our soils which are very deficient in this important constituent, and; especially in the case of Coffee, apt to become acid an account of the large amount of humus added annually to the soil by the leaves which fall from the shade trees and the use of poonac, fish, and cattle manure. The necessity for using Lime and its importance with regard to the bacterial activities in the soil has been described at length in the pages of the *Chronicle* from time to time. (See Vol. V, p. 324 and VI 300). The cost of the material is, however, very high and, owing to the scarcity of limestone deposits in the neighbourhood of estates, most of it has to be transported from the coast. This is generally an expensive business, and the quality of the lime thus obtained is often poor, and frequent complaints are heard that the material contains a high percentage of stones and unburned material. An investigation has shown that in some places, notably in the neighbourhood of Hunsur, at the foot of the Bababudin Hills, and in the Kanan Devan Hills, good local deposits of limestone exist, and it has been several times suggested that it would pay planters to develop these deposits and burn their own lime. A planter some time ago wrote an interesting paper in the *Chronicle* on the subject (Vol. V, p. 475). In Circular No. 130 of the Bureau of Plant Industry of the U. S. Department of Agriculture which has just come to hand, an article appears entitled, "A simple and economical method of burning lime," and the following is quoted from it. Though all the conditions naturally do not apply to this country, it contains some valuable hints, which might well be adopted by those who are interested in the subject. The paper in question gives the results of the experience of burning lime on a farm during the spring of this year.

"The kiln was located on top of a bed of limestone, the greater part of which was exposed, or very near the surface. Poles and slabs were placed lengthwise on the ground, making a layer 30 feet long and 16 feet wide. The largest poles, 8 or 10 inches in diameter, were used for the outside rows in order to make a more stable foundation. The smaller poles and slabs were placed between the large outside poles; and these made up the layer, except for a strip 2 feet wide in the middle, where small wood and kindling were placed the entire length of the kiln. Chinks between the poles and slabs were filled with fine wood and corn stalks. Fine coal was then placed as a second layer to a depth of 2 inches. On top of the coal was placed a 4 or 5 inch layer of limestone crushed to the size of a man's head or smaller. Another layer of coal was then added and this was followed by a layer of limestone 12 to 14 inches thick. Alternate layers of coal and stone were added until the pile was 7 or 8 feet high. The sides were gradually drawn in, making the pile somewhat pyramidal in shape and drawing it to a peak, and were then coaled up by shoveling on as much as the crevices would hold. The kiln was then ready to be fired. A fire was started on the windward and near the middle, where the strip of kindling had been placed. This gradually began to burn. In a day or two, as the fire began to burst out of the sides, dirt was shovelled over it to smother the fire and keep it from burning too rapidly. The burning of the kiln continued about two weeks. After it had cooled off, the dirt was removed. The kiln contained nearly 87 tons of lime and cost 80.10 dollars."

*The effect of Manganese on Plants.*—I have recently received an enquiry about the effect of Manganese as a fertiliser for Coffee. I have no

information as regards Coffee especially, but a good deal of work has been done recently in America, and elsewhere, on the effect of Manganese in the soil upon plants generally. It appears to be proved that Manganese is distinctly harmful to Pineapples. In manganiferous soils the roots of this plant are less extensive and have characteristic swollen tips, marking the cessation of the lateral growth of the roots, death and decay immediately following. The chlorophyll is at the same time bleached. A Bulletin on this subject has been published by Messrs. Wilcox and Kelley (*Hawaii Agricultural Station Bulletin 28*)

Manganese is constantly present in plants, thus explaining wholly or in part the origin of the element in the animal organism. The chlorophyll bearing parts of the plant appear to have more Manganese in them than the underground portions.

A Circular was published by the U. S. Department of Agriculture in January of this year by Messrs. Sullivan & Robinson. These investigators found that Manganese was very active in promoting oxidation changes brought about by oxidising enzymes in plants. In soils also, the power to oxidise easily oxidisable substances is related to the amount of Manganese present and the nature of the organic matter. The growth of the micro-organisms is modified, and their biochemical activities in the soil changed. The absorption of lime and magnesia by plants is increased by the addition of Manganese to the soil.

Manganese is naturally present in soils in amounts up to 0.5%, calculated as  $MnO_2$ , especially in the surface soil. The usual forms present are silicates and the hydrated dioxide.

The most effective compound as a fertiliser is the sulphate, the least effective being the dioxide. In large amounts, the sulphate is more toxic than the carbonate. The amount of sulphate added should not exceed 100 lbs. per acre.

*Yearbook of U. S. A. Department of Agriculture.*—In the Yearbook of the United States Department of Agriculture for 1912, the Secretary in his report states that in Porto Rico the renovation of coffee plantations has been given much attention with promising results, and the value of pruning, fertilising, and cultivating the trees have been demonstrated. By following these means a renovated plantation was made to more than double the average yield of the island. New varieties of coffee have been introduced and many of the higher priced coffees of the world are now in bearing and their seed is being distributed for planting.

In the tables of statistics in the Year Book, the export of Coffee from British India for 1911 is given as 24,593,408 lbs. out of a total world production of 2,370,316,425 lbs., or 1%.

It is mentioned that the culture of American Tea has been introduced in a demonstration experiment now yielding an annual crop of 14,000 to 16,000 pounds of high grade tea, all of which finds a ready market in competition with imported teas.

The export of Tea from British India in 1911 is given as 265,022,376 lbs. out of a world production of 752,896,694, or 35.2%.

Camphor culture has been introduced into Florida with results sufficiently promising to attract private capital on an extensive scale.

It is noticeable that the export of Oilcake and oilcake meal from British India in 1911 was 159,808,768 lbs. out of a world's production of 5,444,961,873 lbs., or nearly 3%.

R. D. A.

## DISTRICT PLANTERS' ASSOCIATIONS.

### Wynaad Planters' Association.

*Proceedings of a General Meeting held at the Meppadi Club,  
on July 9th, 1913.*

**PRESENT.**—Messrs. Bownass, Briggs, Macbain, Milton, G. R. C. Parker, Powell, Stewart, Vernede, West and C. E. Abbott (Honorary Secretary). **Visitor.**—Mr. Whitton. Mr. Powell in the chair.

1841. *Proceedings of last Meeting* were confirmed.

1842. *Shipment of Tea during Monsoon.*—Read further correspondence.—Recorded.

1843. *Membership of District Board, Malabar.*—Read letter from Mr. J. Carson Parker resigning his Membership as representative of the Association, he having left the District. This was accepted with much regret.

Proposed by Mr. Macbain, seconded by Mr. Powell: "That Dr. Frank Milton be nominated to succeed him."—Carried unanimously.

1844. *U. P. A. S. I. Meeting.*—Proposed from the chair: "That Mr. Bownass be elected Delegate, and Rs 200 voted for his expenses."—Carried unanimously. The agenda paper was discussed, and certain points noted to be dealt with by the Delegate.

1845. *Postal Delays.*—Read instances of very great delay in the delivery of parcels, which appears to occur between Calicut and Wynaad. A Member present also complained of packets of English papers being torn open and some abstracted, and of the delay in delivering telegrams and Money Orders, the latter at Sultans Battery. Members were requested to send further instances to the Honorary Secretary for record. However, shortly after the Meeting the Meppadi Office was closed for 8 days for the delivery or receipt of all telegrams, Money Orders, registered letters, parcels and sale of stamps, owing to the serious illness of the Postmaster, there being nobody to act for him. The following instances of delay in delivery of parcels (which was also remarked on at the last Meeting, see para. 1832) were given by Members.

Parcel 4001 despatched from Calcutta on February 21st received at Meppadi on March 8th, 1913.

Parcel 402 despatched from Calicut on March 29th received at Meppadi on April 1st, 1913.

Parcel 111 despatched from Calicut on June 27th received at Meppadi on June 30th.

Three insured parcels despatched June 21st from Calicut, which had not been received on June 28th when the complaint was made.

Parcel despatched from Madras on July 7th reached Meppadi on July 13th. The Honorary Secretary was instructed to address the Postmaster-General on this subject.

1846. *Telegraph Offices.*—Read letter to the Superintendent of Telegraphs, West Coast Division, dated June 5th informing him with reference to a previous communication: "That the residents at Sultans Battery are willing

to guarantee the Department against loss if an office is opened there, and enquiring what the amount of guarantee required will be." No reply having been received, the Honorary Secretary was instructed to write again.

**1847. Attesting Contracts in Mysore.**—Read letter to the Honorary Secretary from Mr. Tavera, Magistrate, Vayitri, calling attention to his letter of November 28th, 1912, as contracts attested by officials who have no authority to do so, are still brought before him.

"The only officials of the Mysore State who are authorised to witness labour contracts are—Amildars, Sub-Registrars, Taluq Sheristadars and Hobli Sheikdars. I have ascertained from the Taluq Magistrate of Nanjan-gode that Hobli Sheikdars are of the same status as the Revenue Inspectors in the British Territory and that the term does not include the Patal who is the village Munsiff, and the Shanbogue who is the village Accountant. The majority of the contracts between Maistries and labourers which are drawn up and executed in the Mysore State are attested by the Patal, and I have the honour to request that you will kindly instruct the Members of the Association to warn their Maistries against taking contracts in future to Patals (or Monigars as they are also called) for attestation."

Members are reminded that H. H. the Maharaja's Government has distinctly refused to authorise Patals and Shanbagues to attest contracts.

**1848. Execution of Warrants in Mysore.**—Proposed by Mr. Stewart seconded by Mr. West: "That the Bangalore Delegate be requested to bring up the most unsatisfactory state of the execution of warrants in Mysore.—Carried.

**1849. Registration of Maistries.**—Read with interest Mr. Nicolls circular on this subject. The Meeting hoped he would bring it forward for discussion at Bangalore.

**1850. Post Office at Vellera Mulla.**—It was suggested that this be removed from its present site which is a long distance from any residents, to one on Pootoo Mulla Estate, where the Manager is willing to provide a building.

(Signed) S. H. POWELL,

Chairman.

( " ) C. E. ABBOTT,

Hon'y. Secretary.

### Central Travancore Planters' Association

*Minutes of the second Quarterly General Meeting of this Association held at Glenmary Bungalow, on Saturday, 19th July, at 10 a.m.*

PRESENT.—Messrs F. Bissett (Chairman), T. C. Forbes (Vice-Chairman), H. C. Westaway, J. S. Wilkie, R. D. Scoble Hodgins, J. H. Ellis, H. C. Bracher, Messrs. J. M. Wilkie and J. H. B. Sullivan (Visitors) and Mr. R. P. Roissier (Honorary Secretary).

The Notice calling the meeting was read.

The Proceedings of the last Meeting were taken as read and confirmed.

**Correspondence.**—Read letter from the Resident of Travancore and Cochin, No. R. O. C. 2096/13 of 26th May *re* Kuttikanom Arrack Tavern,

Resolved " That the Honorary Secretary do write to the Resident and thank him for advice."

Read letter from the Resident of Travancore and Cochin. No. R. O. C. 831/13. Resolved : " That the Honorary Secretary do write to the Resident and inform him that this Association is at present unable to nominate a witness."

Read letter from Mr. E. F. Barber dated 6th May *re* the European Defence Association. Read letter from the Honorary Secretary, Nilgiri Planters' Association dated June 28th *re* " Registration of Maistries."

Read letters and Telegrams from Mr. J. A. Richardson and the Honorary Secretary, Kanan Devan Planters' Association *re* the forthcoming deputation to the Governor of Madras on the subject of the Railway to Kuravanooth.

The Honorary Secretary was instructed to write and ask the Honorary Secretary Kanan Devan Planters' Association, for the place and date of the Meeting. Read letter from the Postmaster-General, Madras, dated 27th May, No. M. C. 47. Read letter from the Postmaster, Peermade, dated 13th May, No. 49. Read letter from Mr. J. A. Richardson, dated 3rd July, *re* Motor Transport. It was resolved " That the Honorary Secretary do write to the Chief Engineer *re* the bad condition of the first 5 miles of the Kottayam-Mundakayam Road and also of the Kumili-Peermade Road, Vandiperiyar Section. Copies of this letter to be sent to the Dewan and Resident." Read U.P.A.S.I. Circulars Nos. 9/13, 10/13, 11/13, also Circular letter of 23th June.

*Bangalore Delegate U. P. A. S. I.*—Mr. Westaway proposed that Messrs. R. P. Roissier and J. S. Wilkie be asked to represent this Association as Delegates at the forthcoming U.P.A.S.I. Conference. Seconded by Mr. J. H. Ellis and carried unanimously.

Mr. Roissier thanked the Chairman and the Members of the Association for the honour they had done him in electing him as one of their Delegates. Mr. Wilkie also thanked the Chairman and the Members for having elected him.

The Chairman proposed that the Delegates be given Rs. 100 each for expenses.

*Agreement Forms. Breach of Contract.*—It was agreed to postpone the discussion on this subject till the next General Meeting.

*Resolution by Mr. Westaway.*—Mr. Westaway proposed " That the Honorary Secretary do write to the Excise Commissioner requesting him to accept Coast Agents' Certificates as a guarantee against the importation of dutiable goods." Seconded by Mr. J. S. Wilkie and carried unanimously.

"It was resolved " that copies of this resolution be sent to Coast Firms and to other Associations concerned asking for their support."

A vote of thanks to the Chair was proposed by Mr. Ellis and seconded by Mr. Westaway and carried unanimously.

The Proceedings then terminated.

(Signed) REGINALD P. ROISSIER.

*Hony. Secretary.*

## CORRESPONDENCE.

## Estate Accounts.

THE EDITOR,

*Planters' Chronicle.*

My attention has been drawn to X's letter in the *Chronicle* of May 17th, which I think is a very sensible one and were his requests followed out, it would add much to the interest of our weekly paper.

Our worthy Editor rightly points out, however, that these articles must be written by planters themselves.

As there seem to be a lot of enquiries regarding Estate accounts and the best forms of keeping the same, I have undertaken to write a short article on these, though the subject is a dry one and rather difficult to explain fully on paper.

I think I may say without boasting that, I can speak from some experience on this subject as I have the accounts of Five Companies and several private Estates through my hands every month.

The form I use was adopted after the combined discussion and approval of the Directors of the above mentioned Companies, and I think will be found fairly concise and simple.

I will send a few samples of these forms to the Secretary of the U. P. A. S. I., and they will be available at the August meeting for any one who wishes to see them.

The actual book-keeping I don't think calls for much explanation. There is only one way of keeping books, and that is by double entry. The books required for Estate purposes are Check-Roll, Cash Book, Journal and two or one large Ledger divided into two parts, so that the Kanganies advance accounts can be kept separate and the balance in this represents advances outstanding.

The only remarks I would make regarding the keeping of the books are, that the Superintendent should always write up his own journal, and either he or his Assistant should keep the cash book. A small petty cash account may be necessary for postages and other small items, which may be kept by the Office Writer.

There are various forms of Check Rolls, but I think there is no doubt that the best one is, that in which the monthly balances are carried forward after deducting cost of rice and stores, cash payments, &c., so that the balance shown in the final abstract represents the balance due to coolies and must agree with the balance shown in the Check-Roll account in the Ledger at the corresponding date.

This is one of the most important points in Estate accounts, and one on which there have been more losses than any other through carelessness in not checking this item monthly.

The advent of so many Companies in connection with the Planting Industry in Southern India, has upset the old forms of Estate accounts kept by private Proprietors and made a more complicated form of monthly report absolutely necessary.

To make this as concise as possible, and reduce the number of headings as much as practicable, has been my aim.

Working with Companies, it is imperative to keep Revenue and Capital Expenditure entirely separate, and with a view to this, I divide my report form into THREE headings.

Description of Works.	This month.	Pre-viously	Total to date.	Cost per lb.	Estimate	Estimate cost.
	Rs. a. p.	Rs. a. p.	Rs. a. p.		Rs. a. p.	per lb.
<b>General Charges.</b>						
1. Salaries and Allowances ...						
2. Fire Insurance ...						
3. General Contingencies ...						
4. Bank Commn., Post, &c. ...						
5. Recruiting Expenses and Bonus ...						
6. Medical charges ...						
7. Land Tax ...						
8. Visiting Agent ...						
9. Watchmen ...						
10. Survey & census ...						
<b>UP-KEEP OF MACHINERY AND BUILDINGS.</b>						
13. Lines ...						
14. Bungalows ...						
15. Factory buildings ...						
16. Stable and cattle sheds.						
17. Machinery ...						
18. Hospital ...						
19. Rice Store ...						
20. Furniture ...						
21. Wells ...						
Total ...						
Proportion to Revenue...						
Ditto Capital ...						

The total of these items is divided monthly between revenue and capital according to the acreage under each heading.



Description of Works.	This month.	Pre-viously.	Total to date.	Cost per lb.	Estimate	Estimate cost.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
<b>Revenue Account.</b>						
UP-KEEP OF MATURE TEA.						
24. Weeding ...						
25. Roads, Drains and Bridges ...						
26. Nurseries and Supplying ...						
27. Tools and Carts ...						
28. Pruning ...						
29. Forking & Manuring ...						
30. Ravines ...						
31. Pests & Diseases ...						
<b>CROP EXPENSES.</b>						
32. Plucking ...						
33. Manufacture ...						
34. Transport ...						
35. Packing & Packages ...						
36. Fuel and Water ...						
37. Shipping Charges ...						
Total Revenue account ...						
Plus Proportion of Gen. Charges, &c. ...						

Description of Works.	This month.	Pre-viously.	Total to date.	Cost per lb.	Estimate	Estimate
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
<b>Capital Account.</b>						
<b>UP-KEEP IMMATURE CLEARINGS.</b>						
46. Weeding ...						
47. Roads, Drains and Bridges ...						
48. Nurseries and Supplying ...						
49. Tools ...						
50. Pruning ...						
51. Felling & Manuring ...						
52. Plants & Diseases ...						
53. Shade Trees ...						
<b>NEW CLEARINGS.</b>						
58. Nurseries ...						
59. Felling and Clearing ...						
60. Lining and Holing ...						
61. Planting ...						
62. Supplying ...						
63. Weeding ...						
64. Roads and Drains ...						
65. Fences & Boundaries...						
66. Shade Trees ...						
67. Tools ...						
<b>NEW BUILDINGS AND MACHINERY.</b>						
71. Lines ...						
72. Bungalows ...						
73. Factory Buildings ...						
74. Machinery ...						
75. Stables & cattle sheds...						
76. Furniture ...						
<b>Total Capital Account...</b>						
<b>Plus Proportion of General Charges...</b>						
<b>Grand Total (Revenue and Capital)...</b>						

So that the total of Revenue & Capital represent the total Estate expenditure, and the Secretaries and the Directors can see at a glance the Revenue cost of their produce, and by adding on shipping and home charges, can calculate roughly their probable profit per pound.

The cost per pound should be worked out monthly against each item, so that it can be compared with the Estimate column and reasons given in the remarks column for any excess.

The Expenditure is divided up into headings, some of which of course are not used, but I see no way of reducing the number. Some report forms I have seen repeat the headings under General Charges twice over under Revenue and Capital, but this, I consider, quite unnecessary, besides entailing 10 or 12 separate calculations whereas the above report only requires the total to be divided.

On the reverse side of the form, we have Rice Account, Advance Account, Superintendent's Account, Current and Balance Sheet. Then a work statement, crop account, labour statement, acreage statement and remarks column.

I know many Planters will consider my report form too cumbersome, but we are now in the days of Companies who must have full details, and I am sure my form is not so complicated as many I have seen, and once the Journal is written up and balance sheet checked, the report form can be made out by the Office Writer, and the Superintendent has only to go through it to see that the different items are charged up to their proper headings.

A glance shows how Expenditure in every item compares with the estimated cost, and the Visiting Agent or Directors can see at once where any excess in expenditure is taking place.

Space will not permit of the form being printed here, but a few copies will be sent to Bangalore, where any one interested can see them at the U. P. A. Office.

I am afraid this is not a very interesting article, but I have written it by request and tried to make the best of it.

SOUTH INDIA.

Bangalore, July 29th, 1913.

#### Brushing Vs. Spraying.

Adderley Estate,  
Coonoor P. O.,  
Nilgiris,

23rd July, 1913.

The EDITOR,

*The Planters' Chronicle.*

Dear Sir,—In reply to the Scientific Officer's request for particulars of coolies employed on brushing, I have taken the averages over 4 months of this year. They are as follows:—

Average 23 coolies per diem, average 931 trees per cooly. I have not taken into account days when no brushing was done on account of rain.

Certain fields of this estate have to be brushed annually, owing to red ants which swarm in from the adjacent Government Forest. If it were possible to get free of these ants, bug work here would be very considerably reduced.

In the Scientific Officer's letter he mentions an estate in Coorg where spraying cost Rs.2/8 to 3 per acre for two sprayings. Does this include cost of material and preparing same? Also what size are the trees? I find that a cooly can only spray 50 trees thoroughly; bug being worst under the leaves, branches which overlap have to be lifted one by one to get at them thoroughly. On steep land, as I have, a cooly standing on the lower side can only reach the upper branches with difficulty. The figures I give in all cases include cost of preparing mixture, and some fields are nearly half a mile distant from the nearest water supply.

*Re. Soda Ash.*—I hope to obtain a supply of this shortly, when I shall make some experiments using this in place of Saltpetre. I do not use washing Soda now.

Yours faithfully,

(Signed) L. A. GERRARD ROGERS.

No. 645/1913.

Office of the Planting Expert,  
Bangalore.

29th July, 1913.

THE EDITOR,

*The Planters' Chronicle.*

Dear Sir,—I understood from my correspondent that the figure quoted as the cost of spraying per acre included the cost of materials but from Mr. Browne's figures it hardly appears that this could have been so. The land is level and the trees large.

Thanks to the kindness of your correspondents, we now have a lot of information to go upon and each man must decide for himself which is the better method. I still think that spraying is the better at the beginning of an attack at any rate when it is important to get over a big area quickly to prevent the pest spreading, and this was the position in Mysore and Coorg it must be remembered.

In Mysore it will resolve itself into a labour problem to a great extent I think. If a cooly only brushes 10 trees a day a large number are needed to treat a big acreage, and whenever I recommend a method like applying manures twice a year, or making and putting out compost, I am usually met with the objection, that it takes too much labour. It is comforting to know that those who adopt brushing evidently do not suffer from this defect.

Personally I shall welcome more letters on this subject from others who have tried the methods under discussion. It is only by comparing notes in this way, that we can form useful opinions, and I feel sure that my friends in Mysore and Coorg, who fortunately have had little experience in dealing with this pest, must find this correspondence as interesting as I do.

Yours faithfully,

(Signed) RUPOLPH. D. ANSTEAD,

*Planting Expert.*

**Fertilization of Coffee.**

The EDITOR,

*The Planters' Chronicle.*

Sir,—Dr. Coleman's article on the above subject is extremely interesting, and his promise of further information gratifying. It would appear that the benefits of cross fertilization are recognized in other branches of fruit cultivation, for a friend of mine when at home, was informed by a grower of apples that in those of his orchards where a few crab apples existed, he found his crop set better than in those without any. Acting on this, my friend caused Liberian plants to be put in here and there at fair intervals all over his coffee fields—and I followed suit last season with Robusta, for the same purpose. From what Dr. Von Faber says of the self reliant tendencies of Liberian, Robusta would appear to be the more advisable variety.

The whole subject of Fertilization is very interesting, and very puzzling to the ordinary planter; bees and insects appear to be valuable aids to it, judging from the results in certain seasons when these abound; and yet I have known healthy looking blossom entirely fail to set when all seemed favourably—and the contrary. Last April both bees and insects were curiously absent from the blossom on most of the Estates in my charge, yet with the exception of the buds injured by sun, it seems to have set quite well. Occasionally, non-fertilization occurs on quite a large scale, and though the berries swell and are brilliantly green, they are found to be hollow. I have always connected this with unfavourable blossom showers, but Dr. von Faber may know another reason!

Yours faithfully,

(Signed) C. DANVERS.

P. S.—Can and will Dr. Coleman give us the arguments by which Dr. von Faber arrived at the conclusion, that cross fertilization was the original method with Liberian, and that self-fertilization arose later? I have no doubt that they are conclusive! but to my present ignorance it seems a retrograde step, considering the benefits of cross-fertilization and the tendency generally towards "the better way."

No. 644/1913.

Office of the Planting Expert.  
Bangalore.

28th July 1913.

THE EDITOR,

*The Planters' Chronicle.*

Dear Sir,—Mr. Danvers may be interested to know that Messrs. C. J. Lewis and C. C. Vincent in an Oregon Agricultural Station Bulletin in 1909 gave an account of some works done with Apple pollination on account of many complaints from various part of the State relative to the lack of setting of fruit. They found that neither plum nor apple pollen was transmitted through the air by wind in sufficient quantities to ensure cross pollination, and of 87 varieties of apples 59 were found to be self sterile, 15 self fertile, and 13 partially self fertile. The consequence is that insects are necessary to pollinate the flowers and produce fruit. In 1910, Mr. W. Backhouse found that European plums fall into two sharply defined groups self fertile and self sterile, and of course the latter must be cross fertilised to produce fruit and in some recent work the same investigator has shown

that insects are necessary for efficient pollination of apples and plums whether a tree is self fertile or not.

In the case of Coffee the most important point to my mind is the difference in *quality* that there may be between berries cross fertilised by insects and self fertilised. It would be interesting to know if Mr. Danvers can show any decided difference in the quality of his crop this year when insects were notably absent from the blossom and so the berries possibly self fertilised, and a crop in which insects were notably abundant during the blossom period.

I say *possibly* self fertilised above because wind may play a part in the pollination of coffee. The whole subject is interesting and difficult but it is hoped that the pollination experiments being carried out in co-operation with the Government Entomologist on a number of estates in Mysore and Coorg this year may throw some light upon it.

With regard to Mr. Danvers's post-script, Dr von Faber concluded that self fertilisation arose later than cross fertilisation to guard against failure of fertilisation in a year like this, when insects being absent, if only cross fertilisation existed, there would be no fruit produced. This is hardly a retrograde step but rather an advance, since the coffee has now developed two methods of fertilisation, and this insures the production of a crop. If one fails the other succeeds, and for choice, the plant prefers cross fertilisation, and hence the wonderful provision that the pollen tubes from outside pollen, grow faster than those of its own pollen and thus reach the ovaries first.

Yours faithfully,

(Signed) RUDOLPH D. ANSTAD,

Planting Expert.

Department of Agriculture, Mysore,  
Bangalore, July 30th, 1913.

Fletcher Norton, Esq.,  
Managing Editor.

"Planters' Chronicle,"

Bangalore.

Dear Sir,—With reference to your letter of the 29th instant I think Mr. Anstead has explained Mr. Danvers' difficulty clearly. Dr. von Faber's reason for considering cross fertilisation to be the normal and original method of fertilisation in coffee is simply the fact that the coffee flowers possess all the usual characters that go along with insect fertilisation, *vis.*, striking colour, scent, &c.

There are a good many examples of plants which from their appearance and structure of their flowers must have originally been fertilised by insects and which now depend entirely or almost entirely on self fertilisation for the production of seed.

I am writing to Dr. von Faber for further information with regard to his investigations on fertilisation of coffee.

Yours faithfully,

(Signed) LESLIE C. COLEMAN, M.A., Ph. D.,

Director of Agriculture.

**Freights.**

THE EDITOR,

28th July, 1913.

*The Planter's Chronicle,*

Bangalore.

Dear Sir.—Mr. John A. Graham's laudable endeavour to arouse his sleeping brethren? to the gross injustice which has been for many years perpetrated upon the Planting Community by that "vile blood sucking reptile" the Coast Agent, can only be classed as a spasm, due to a want of knowledge on the subject on which he wishes to invite united action apparently!

Mr. Graham may be interested to hear that the much discussed question of Freight rebates was more or less laid to rest in 1894 I think, chiefly because one if not more of the agitators realised the equity of the Curer's position in regard to these freight returns.

I should be glad to give any information Mr. Graham may wish for and which may ease the tension? between curers and planters on this subject.

I am, dear Sir,

Yours faithfully,

A. CURER.

**Green Bug.**

Coimbatore, 29th July, 1913,

THE MANAGING EDITOR,

*The Planter's Chronicle,*

Bangalore.

Dear Sir.—With reference to the suggestion by Mr. L. King-Church in your issue of the 14th instant and the Government Entomologist's recommendation, we beg to state that for our part we are issuing the following guarantee which we think fully meets the case:—

"We guarantee that all our manure bags are absolutely free from infection when despatched from our Works, and we are further prepared to wash each bag with an insecticide solution prior to despatch or if preferred, to supply free of cost sufficient insecticide to spray the bags on arrival at Estate."

We dare say other Firms will be prepared to do the same.

We are, dear Sir,

Yours faithfully,

For T. STANES & Co., Limited,

(Signed) F. J. STANES,

Director.

## RUBBER

### The Plantation Rubber Industry.

by

CYRIL E. S. BAKENDALE.

*A Paper Read at the Third International Rubber Conference, held in New York, 1912.*

(Continued.)

#### CULTIVATION.

With your permission I will now direct your attention to a few details connected with our plantation work.

At first, the cultivation was almost entirely confined to interplanting *Hevea* trees through the old fields of coffee, but a few bold spirits ventured to clear the jungle for this product only. But it is regrettable to mention that some tempered their rashness by planting rubber and cocoanuts in alternate lines, and had to pay rather heavily for their caution, by being forced to cut either one or the other when both required more room for expansion. I need hardly mention that it was usually the cocoanuts that were condemned. As one who does not believe in keeping two good things in a parcel not large enough to hold both, I have planted the two products in adjoining fields; and, perhaps, for that reason, my feelings have always been harrowed by the woeful spectacle afforded by the destruction of thousands of these valuable palms.

The interplanting of *Ficus Elastica*—the red rubber of commerce (this has no connection with the rubber shipped from the Congo)—was at one time popular, particularly on the estates of the coast districts, but although this variety yielded a fair quantity at the first tapping, it did not compare at all favorably with *Hevea* in continuous yield, and the tapping seemed to check its growth. A considerable area remains under this variety in Sumatra, but it has become a negligible quantity in the Peninsula and has never been in favour in Ceylon.

At the outset we obtained our *Hevea* seeds from the original stock, and this was an expensive item, which has gradually declined in cost, now that we have trees of all ages and have no certain knowledge of any difference in the quality of the plants, whether raised from seeds of old or young trees.

In the hilly districts ordinary surface drainage is required, but near the coast great care has to be taken to select land which can be drained efficiently, and this work frequently, involves considerable expense. Fortunately for us, Malaya is not subject to tidal waves, as large areas of our first plantations are only a few feet above sea level. The drains are laid out with the compass, and cut through the living jungle before felling. The jungle is then cut down and the branches lopped to a level of about 4 feet from the ground. A few weeks later, the burning is carried out by a line of men walking at ten to twenty yards apart, with their backs to the wind; and in favourable weather, the undergrowth and smaller branches are consumed. Afterwards the unburnt branches and small trees are piled and burnt, and generally speaking, when this is done the field is described as cleared, although the stumps and trunks of the big jungle trees still remain on the land. Recently on some estates, heavy expense has been incurred in getting rid of these, before planting, as a precaution against the spread of root disease and white ants.

(To be continued.)